UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

SEP 20 2016

Mr. James P. Johnston, P.E.
Deputy Director
Tennessee Division of Air Pollution Control
Department of Environment and Conservation
312 Rosa L. Parks Avenue, 15th Floor
Nashville, Tennessee 37243

Dear Mr. Johnston:

On February 25, 2016, our office responded to your letter regarding PHG Energy's request for non-hazardous secondary material (NHSM) determination, where we outlined the regulatory self-implementation clause as well as enumerated the areas that a company would have to address to adequately fulfill the requirements for using a solid waste as a fuel such that it is no longer a solid waste. In your letter of April 14, 2016, where you requested technical assistance on the PHG Energy application, you reiterated your Agency's need for clarity on the subject of NHSM (Enclosure 1 w/o attachments). As a result of that letter, we had an April 20, 2016, teleconference with members of your staff to discuss specific issues and our need to have a coordinated response regarding PHG Energy. You also had questions concerning the potential applicability of the New Source Performance Standards (NSPS) Subpart AAAA (Small Municipal Waste Combustors). The responses herein are provided by the Region 4 Air Pesticides and Toxics Management Division (APTMD) as guidance only for the state to make a determination of applicability and are not final determinations of applicability by EPA, concerning the proposed PHG Energy project. We appreciate the opportunity to discuss this topic, and remain committed to assisting you through the process. We offer the following answers to your most recent letter, and hope that it will guide you through the self-implementation process.

1. *Could the compost feedstock pursued under self-implementing rules be considered as a NHSM non-waste fuel?*

In general, compost can qualify as NHSM non-solid waste fuel, if it passes legitimacy criteria, is sufficiently processed AND it is the fuel used in a combustion unit for energy recovery. In the teleconference conversation of June 27, 2016, PHG Energy indicated that the compost has been processed into a non-waste for use as a fuel in the "pyrolysis-combustion unit".

The proposal, as described by PHG Energy, states that the compost will be fed first to a gasification unit and the resultant synthetic gas (syngas) will be cleaned in a cyclone and routed as fuel for a thermal oxidizer. The proposal indicates that the thermal oxidizer (TO) will be used to reduce odor generated from the storage and composting of municipal solid waste and is fueled by natural gas. During the June 27, 2016,

teleconference, PHG Energy stated that the BTU value of the compost fed to the gasifier is approximately 6802 Btu/lb and the heating value of the syngas will be approximately 100 Btu/lb.

After review of the PHG Energy project and discussions with PHG Energy staff, EPA believes that while the compost is used as feedstock for gasification, it would not be considered a fuel used in a combustion unit for energy recovery if no combustion with resultant energy recovery is taking place in the gasification unit. EPA also questions the purpose of the gasification step, as it is unclear what purpose it serves, beyond reducing the volume of compost (i.e. the Btu value decreases after gasification).

Furthermore, EPA does not believe that the syngas is a fuel used for energy recovery when combusted in the thermal oxidizer. From the description of the syn gas provided in the submittals, and teleconference of June 27, 2016, it appears that the syngas provides little if any fuel value for the TO, and the TO does not convert heat from combustion into useful thermal energy, other than to dry incoming compost for the gasifier. Under the scenario described, neither the compost nor syngas are (or potentially are) used as fuels in a combustion unit, so that the NHSM rule would not apply to the PHG Energy project in the first place.

2. *EPA's February 25, 2016 letter stated the synthetic (syn) gas not the feedstock would be relevant as to what constitutes the fuel for the thermal oxidizer. Should the compost or the syngas be appropriate as the fuel?*

See above.

3. *If the feedstock is a non-waste NHSM fuel, would NSPS Subpart AAAA apply or will the rule only pertain to the syn gas (gasified waste) as fuel that is fired in the thermal oxidizer?*

As discussed in response to Question 1, we do not believe that NHSM should be applied to the project described by PHG Energy. Therefore, NSPS Subpart AAAA would be applicable, if the feed rate to the municipal waste combustion unit is greater than 35 tons per day (tpd) and less than 250 tpd of municipal solid waste. A "municipal waste combustion unit" is defined in NSPS Subpart AAAA at section 60.1465 in relevant part as "any setting or equipment that combusts solid, liquid, or gasified municipal solid waste. ..." A more detailed discussion of what we believe constitutes the "municipal waste combustion unit" is detailed in our response to question 6a.

4. *Would the compost that has been processed into a NHSM be considered altered and not municipal waste?*

As indicated above, the NHSM standards would identify requirements for processing of the compost into legitimate non-wastes fuels combusted for energy recovery or when used as ingredients. Those standards do not impose requirements for other possible secondary end-uses under state solid waste programs. Compost by its very nature has been changed as a result of the biological activity which converts organics into a useable soil amendment, but it retains its identity as derived from municipal solid waste. If used for its intended purpose as a soil amendment, the compost may no longer be a solid

waste under state solid waste programs. However, if it is used in any manner other than its intended use as a soil amendment, it may remain a solid waste. For the reasons discussed in response to Question 1, we do not believe that the PHG Energy compost is a non-waste fuel under NHSM standards.

5. *"Gasified municipal waste" is included in the definition of municipal waste combustion units in NSPS Subpart AAAA. Would the syn gas be considered "gasified municipal waste"? PHG Energy stated that due to self-implementing criteria when comparing the syn gas with a low BTU content of 1300 BTU/lb to that of standard of natural gas at 5000 BTU/lb with additional syn gas contaminants/components as compared to natural gas, the syn gas would likely not qualify as a non-waste NHSM fuel. Accordingly, it could be subject to NSPS Subpart AAAA as a waste fuel.*

Yes, syngas generated from a gasifier would be considered gasified municipal waste and subject to regulation under Subpart AAAA if the applicability criteria (e.g. date of construction, feed rate) is met and when combusted.

6. *Other issues as mentioned in the TN APC March 22, 2016 letter and attachments arise. These matters include the following:*

    a. *Is the gasifier/thermal oxidizer a "pyrolysis/combustion unit" defined in Subpart AAAA and if so would it be considered "municipal waste combustion unit" which includes pyrolysis/combustion units in its definition. Is pyrolysis/combustion comprised of one (gasifier which is pyrolysis) or two 2 pieces of equipment (gasifier and thermal oxidizer which is combustion)?*

As described by PHG Energy, the process is designed to route the syngas generated in the gasifier through a cyclone and then to thermal oxidizer. NSPS Subpart AAAA applies to municipal waste combustion units, which are defined in §60.1465 in relevant part as "any setting or equipment that combusts solid, liquid, or gasified municipal solid waste including, but not limited to…pyrolysis/combustion units" (except for pyrolysis/combustion units located at a plastics or rubber recycling unit as specified in §60.1020(h)). A "pyrolysis/combustion unit" is defined in §60.1465 as - "a unit that produces gases, liquids, or solids by heating municipal solid waste. The gases, liquids, or solids produced are combusted and the emissions vented to the atmosphere." Based on this definition and the clause "any type of setting or equipment" a pyrolysis/combustion unit could consist of one piece of equipment and could also consist of more than one piece of equipment and can include the combustion of gases, liquids or solids produced from pyrolysis or gasification. EPA believes the determination of whether the pyrolysis/combustion unit is one piece of equipment or more than one piece of equipment (e.g. a pyrolysis unit and a separate combustion unit) should be determined based on site specific facts, including, but not limited to the design of the pyrolysis and combustion chambers, the proximity of the pyrolysis and combustion chamber to one another, the presence (or absence) of "cleaning" steps (e.g. scrubber or cyclone) or processing steps (e.g. distillation) between the pyrolysis unit chamber and the combustion unit chamber and whether the operation of the steps are integral to one another. As gasification by itself is not combustion and cleaning or processing steps allow for "off-ramps" where the

resultant syngas may be evaluated for NHSM, we believe such steps provide a boundary between the gasifier and the combustion unit such that they are not pyrolysis/combustion units but should be evaluated as separate units. For the PHG project, as described, the syngas is routed through a cyclone prior to combustion in the thermal oxidizer; therefore we believe that the process is described as a gasifier which produces gasified municipal solid waste and which is subsequently combusted in the thermal oxidizer. Therefore, it is the thermal oxidizer which is evaluated for applicability under NSPS AAAA.

Subpart AAAA does not make a distinction between gasified municipal solid waste produced by gasification and gasified municipal solid waste produced by pyrolysis of municipal solid waste. While NSPS AAAA does not provide additional detail, the final NSPS Subpart Eb (Standards of Performance for Large Municipal Waste Combustors) did provide a discussion at 60 FR 65391 (December 19, 1995) –

> "An MWC is defined as any setting or equipment that combusts MSW including air curtain incinerators. Municipal solid waste combustion includes the direct combustion of MSW *or the combustion of MSW gases from pyrolysis or gasification*. The MWC unit includes any type of setting or equipment including combustion equipment with or without heat recovery." [Emphasis added]

Since the definition of "municipal waste combustion unit" in NSPS Subpart AAAA is substantively the same as the definition of "municipal waste combustor" in Subpart Eb, and there is no discussion to the contrary, the rationale from the preamble of Subpart Eb should also apply to Subpart AAAA. Municipal solid waste combustion includes the direct combustion of MSW or the combustion of MSW gases from pyrolysis or gasification.

As previously discussed in response to Question 1, we do not see an "off-ramp" for the syngas under NHSM, nor does the thermal oxidizer meet the exemption in section 60.1020(b) for small power production facilities. Therefore, we believe the thermal oxidizer is a municipal waste combustion unit.

> b. *Per Subpart AAAA if the weight of municipal waste combusted is less 30% of the total material combusted, an exemption from Subpart AAAA rule can be obtained by keeping records of fuels burned and respective weight each quarter. If the compost feedstock is deemed municipal waste, it appears the wood chips would be at 50% weight of the total input fuel and Subpart AAAA would apply. Currently the application indicates a feedstock mix of 33 tons/day of compost and 33 tons/day of wood chips thus surpassing the 30% weight criteria and implying municipal waste combustion. Does this continue to classify the operation as municipal waste combustion even though the wood chips could be considered a non-waste NHSM fuel?*

For the reasons stated in response to Question 1, we do not believe that NHSM can be applied to the PHG Energy project. For the reasons described in response to Questions 3-6, we believe that NSPS AAAA would apply. Since neither the compost nor wood chips can receive a non-waste determination, the exemption at section 60.1020(g) is moot.

7. *RCRA rules provide determinations and procedures for a material being considered as a waste or non-waste NHSM fuel. If the NHSM qualifies as a non-waste fuel, does this necessarily exempt them from NSPS solid waste incineration rules under CAA 129? There appears to be some instances of decisions which conflict and are unclear as to how a federal air rule can apply based on the difference between solid waste rulings/determinations and those of air.*

In general, NHSMs that are determined to be non-wastes under Part 241 can be combusted in units meeting CAA 112 standards rather than CAA 129 standards. Due to the generality of the question, we are unable to answer more specifically, or to fully understand your concerns that determinations under NHSM and Section 129 conflict. NHSM only has meaning to determine whether something is a solid waste when used as a fuel or ingredient, and should not conflict with applicability under section 129 or section 112 of the Clean Air Act.

8. *Subsequent to EPA's 2011 NHSM rules and revisions, have there been determinations and exemptions from municipal waste or other federal air rules especially solid waste incineration that TN APC and PHG should be aware of?*

We are not aware of any activities which are inherently allowed to continue without industry going through the examination of NHSM, and making a full determination on how it applies to their specific activity. NHSM/MSW determinations made by EPA HQ and Regions are included on the NHSM website at https://www.epa.gov/rcra/identification-non-hazardous-secondary-materials-are-solid-waste.

There is one final guidance issue that we would like to elaborate on, and that is the proper protocol used in making contaminate concentration comparisons between a proposed material (compost) and the contaminate concentrations in traditional fuels. Even if the NHSM standards did apply, the halogen analysis of the sample combined with the comparison method that PHG Energy utilized was deficient. PHG Energy had taken a single sample for halogens, and made a comparison to the range for halogens (either contained in wood/biomass or solid fossil fuels/coal). As a matter of proper protocol for comparison purposes, if you are going to compare to a range, you must have multiple samples. However, if you are going to rely on a single sample, you must compare to the arithmetic mean of the range. PHG Energy had taken a single sample of material and analyzed for halogens, and then compared it to a range of values for coal and/or wood/biomass. The procedure that PHG Energy had used, is outside the normal and acceptable routine for comparisons.

We appreciate your interest in the NHSM rule, and allowing us to assist you in whatever way you feel may be appropriate. If you should have any other questions regarding RCRA applicability, please contact David Langston, of my staff, at 404-562-8478 or by email at langston.david@epa.gov. The guidance in this letter concerning NSPS Subpart AAAA has been coordinated with the U.S. EPA's

Office of Air Quality Planning and Standards (OAQPS) and the Office of Compliance (OC). If you have questions concerning the Subpart AAAA issues, please contact Keith Goff, of my staff, at 404-562-9137 or by email at goff.keith@epa.gov.

Sincerely,

G. Alan Farmer
Director
Resource Conservation and Restoration Division

Jeaneanne M. Gettle
Acting Director
Air Pesticide and Toxic Management Division

Enclosure

cc: George Faison, EPA, ORCR
Charlene Spells, EPA, OAQPS
Marcia Mia, EPA, OC

Enclosure 1

April 14, 2016 Letter from TDEC Air Pollution Control, James P. Johnson, to EPA Region 4, Resource Conservation and Restoration Division, Alan Farmer

STATE OF TENNESSEE
**DEPARTMENT OF ENVIRONMENT AND CONSERVATION**
**DIVISION OF AIR POLLUTION CONTROL**
**WILLIAM R. SNODGRASS TENNESSEE TOWER**
**312 ROSA L. PARKS AVENUE, 15TH FLOOR**
**NASHVILLE, TENNESSEE 37243**

April 14, 2016

Mr. Alan Farmer, Director
Resource Conservation and Restoration Division
USEPA Region 4
Sam Nunn Atlanta Federal Center
61 Forsyth Street
Atlanta, Georgia 30303-8960

Subject: Review of applicability for non-hazardous secondary material as a non-waste fuel and NSPS Subpart AAAA applicability for a proposed gasification project for Sevier Solid Waste, Inc. - Compost Plant, Pigeon Forge, TN

Dear Mr. Farmer:

This letter requests technical guidance from both the RCRA Division (Waste Section) and the Air, Pesticides and Toxics Management Division (Air Section) of EPA. We understand EPA Region IV is coordinating the response to TDEC's requests between these two programs. Thank you for your letter dated February 25, 2016 regarding criteria to consider in determining if compost derived from municipal waste can be classified as a NHSM waste fuel or a NHSM non-waste fuel. Previously PHG Energy, LLC (PHG) submitted a November 2, 2015 request to consider the processed compost as NHSM. The Tennessee Division of Air Pollution Control (TN APC) of TDEC appreciates the information and guidance shared during the March 7, 2016 teleconference with participants from EPA Region IV, EPA headquarters, TN APC and PHG. Mr. David Langston of RCRA has been especially helpful in providing specific written guidance and procedure regarding self-implementing rules for PHG to consider material for NHSM classification. Subsequent to the teleconference, TN APC sent a letter to PHG dated March 22, 2016 shown in Attachment 1 regarding submitting a construction permit application and potential applicability issues to address with respect to NSPS Subpart AAAA, Small Municipal Waste Combustion Units (greater than 35 tons per day and less than 250 tons per day and commenced after August 30, 1999). PHG responded to TN APC on March 29, 2016 and submitted a construction permit application and associated documents with an initial explanation justifying PHG's position that the NHSM compost as processed (aerobic treatment, drying, screening and sorting) is a NHSM non-waste fuel as well as the yard waste (branches/limbs) cut into wood chips. This is contained in Attachment 2. Subsequent to TN APC's receipt of the construction permit application, on April 12, 2016 PHG submitted actual lab analyses of contaminants/components of the feedstock as compared to traditional fuels with BTU and other data for the processed compost and wood chips from clean wood (branches/limbs/yard waste). PHG also reiterated and further expounded their position that the feedstock meets similar criteria for a NHSM non-waste fuel classification and included EPA's August 22, 2013 letter of determination declaring Waste Management's SpecFuel (paper/cardboard fiber and plastic) a non-waste NHSM fuel. These documents comprise Attachment 3. Attachment 4 is a plant diagram of equipment and a flow diagram of issues/concerns/questions for integral parts of the process operations as related to the proposed operation.TN APC is hereby requesting a technical review and determination of the following items regarding the applicability of these federal waste and air rules.

1. Could the compost feedstock pursued under self-implementing rules be considered as a NHSM non-waste fuel?

2. EPA's February 25, 2016 letter stated the synthetic (syn) gas not the feedstock would be relevant as to what constitutes the fuel for the thermal oxidizer. Should the compost or the syn gas be appropriate as the fuel?

3. If the feedstock is a non-waste NHSM fuel, would NSPS Subpart AAAA apply or will the rule only pertain to the syn gas (gasified waste) as fuel that is fired in the thermal oxidizer?

4. Would the compost that has been processed into a NHSM be considered altered and not municipal waste?

5. "Gasified municipal waste" is included in the definition of municipal waste combustion units in NSPS Subpart AAAA. Would the syn gas be considered "gasified municipal waste"? PHG stated that due to self-implementing criteria when comparing the syn gas with a low BTU content of 1300 BTU/lb to that of standard of natural gas at 5000 BTU/lb with additional syn gas contaminants/components as compared to natural gas, the syn gas would likely not qualify as a non-waste NHSM fuel. Accordingly, it could be subject to NSPS Subpart AAAA as a waste fuel.

6. Other issues as mentioned in the TN APC March 22, 2016 letter and attachments arise. These matters include the following:

   a. Is the gasifier/thermal oxidizer a "pyrolysis/combustion unit" defined in Subpart AAAA and if so would it be considered "municipal waste combustion uinit" which includes pyrolysis/combustion units in its definition. Is pyrolysis/combustion comprised of one (gasifier which is pyrolysis) or two 2 pieces of equipment (gasifier and thermal oxidizer which is combustion)?

   b. Per Subpart AAAA if the weight of municipal waste combusted is less 30% of the total material combusted, an exemption from Subpart AAAA rule can be obtained by keeping records of fuels burned and respective weight each quarter. If the compost feedstock is deemed not municipal waste, it appears the wood chips would be at 50% weight of the total input fuel and Subpart AAAA would apply. Currently the application indicates a feedstock mix of 33 tons/day of compost and 33 tons/day of wood chips thus surpassing the 30% weight criteria and implying municipal waste combustion. Does this continue to classify the operation as municipal waste combustion even though the wood chips could be considered a non-waste NHSM fuel?

7. RCRA rules provide determinations and procedures for a material being considered as a waste or non-waste NHSM fuel. If the NHSM qualifies as a non-waste fuel, does this necessarily exempt them from NSPS solid waste incineration rules under CAA 129? There appears to be some instances of decisions which conflict and are unclear as to how a federal air rule can apply based on the difference between solid waste rulings/determinations and those of air.

8. Subsequent to EPA's 2011 NHSM rules and revisions, have there been determinations and exemptions from municipal waste or other federal air rules especially solid waste incineration that TN APC and PHG should be aware of?

TN APC is requesting a timely ruling regarding these matters since a construction permit is pending and if the project is subject to NSPS Subpart AAAA, the applicants have indicated they are not likely to pursue the proposed project. If questions arise regarding this matter, please contact Eric Flowers at 615-532-0609 and/or email him at Eric.Flowers@tn.gov. Thank you for your continued assistance in this matter.

Sincerely,

James P. Johnston, P.E.
Deputy Director
Tennessee Division Air Pollution Control

cc: Beverly Banister
Attachments 1-4